UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,944	05/02/2005	Reiner Ludwig	P16579-US1	8716

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EXAMINER
AFOLABI, MARK O

ART UNIT	PAPER NUMBER
2454	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/511,944	LUDWIG ET AL.
	Examiner	Art Unit
	MARK O. AFOLABI	2454

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>19 April 2002</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-6 and 8-23</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-6 and 8-23</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>19 April 2002</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☒ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>10/20/2004</u>.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to application No. 10/511,944 filed on 04/19/2002, claims 1-6 and 8-23 have been examined.

Information Disclosure Statement

2. Applicant is respectfully reminded of the Duty to disclose 37 C.F.R. 1.56 all pertinent information and material pertaining to the patentability of applicant's claimed invention, by continuing to submitting in a timely manner PT0-1449, Information Disclosure Statement (IDS) with the filing of applicant's of application or thereafter.

Specification

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Appropriate correction is required.

4. The abstract is objected to because the abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6.   The invention as disclosed in claims 1-5, 15, 22 and 23 are rejected under 35 U.S.C. § 101 as being non-statutory subject matter. *see In re Comiskey,* Case No. 2006-1286, at 8, 16-21, (Fed. Cir, September 20, 2007).

All the elements in claim 1-5, 15, 22 and 23 are software components. No hardware or computer readable medium are recited in the claims. Furthermore, computer program representing computer listing *per se* (i.e. software per se) *when embodied in a computer-readable media are still not statutory because they are not capable of causing functional change in the computer.* Therefore, these claims are not limited to statutory subject matter and it preempts the judicial exception, see, Gottschalk v. Benson, 409 U. S. 63, 175 USPQ 673 (1972).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 1-6 and 8-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aoki** et al. (US 6,757,255) (**Aoki** hereafter) and **Kadyk** et al. (2002/0157019) (**Kadyk** hereafter).

Regarding claim **1**, a device for at least one end-to-end data flow in a network, comprising:
Aoki teaches

an estimation unit (e.g., `Performance judging unit 53 of Fig. 14`), for estimating a current minimum data load necessary to occupy a bandwidth available to said flow in said network , said estimation unit outputting a flow's pipe capacity (`measurement-oriented packet transmitting/receiving unit`), estimation and (`col. 5, lines 17-21 and col. 16, lines 33-67, particularly, lines 33-37`)

a comparison unit (`e.g., Performance Determining unit`), for comparing said estimated pipe capacity with a predetermined capacity threshold (`col. 3, line 58 through col. 4, line 1`);

a decision unit (`Fig. 15—item S13`), for deciding to proxy said flow if said estimated pipe capacity lies above said capacity threshold (`e.g., The measurement-oriented packet unit 51 receives the ICMP echo reply packets transmitted back by the receiving-side communications device, and measures of the round trip times (RTT1, RTT2, , , ,RTTn) of the respective packets (step S11)col. 3, line 58 through col. 4, line 8 and col. 16, lines 3-12`); and

a routing unit (`Fig. 16—item RT, 'Router'`), for routing said flow according to the decision (`col. 16, lines 38-43 and lines 60-67`).

Aoki fails to explicitly teach a proxy for at least one end-to-end data flow in a network,

However, Kadyk teaches a proxy (404 of Fig. 4) for at least one end-to-end data flow in a network (e.g. Once the proxy receives the proper credentials from the client, the proxy forwards the request for a secure end-to-end connection to the server, [0018], Kadyk).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the features of **Aoki** for measuring the communication performance to the teachings of **Kadyk** for negotiating through a proxy system in a secure end-to-end connection between the client system and server system for the benefit to obtain

credentials from client computers to insure that the client computers are authorized to use resources ([0008], Kadyk).

Regarding claim **2**, wherein said routing unit is adapted to route from the network layer of said network to a higher protocol layer (e.g. network layer to transport layer, col. 1, lines 16-36 Aoki) of said proxy (404 of Fig. 4, Kadyk) and, data that are to be transmitted through said end-to-end flow if said estimated pipe capacity lies above said capacity threshold (e.g. judging that the available bandwidth of the network route in protocol of a transport layer of the OSI Reference model in which the protocol itself such as a UDP does not control the transfer speed, exceeds a certain predetermined value, col. 4 lines 1-8, Aoki).

Regarding claim **3**, wherein said capacity threshold depends on a processing load of said proxy (e.g., an overhead (a load on the server and the router) burdened on the measurement. it would be rather desirable to utilize the ICMP echo packet with a processing load because of the overhead becoming larger in the order of the ICMP, the UDP and the TCP, col. 12 lines 56-60, Aoki).

Regarding claim **5**, wherein said flow's pipe capacity estimation is based on the end-to-end worst-case, round trip time (e.g., S32 of Fig. 20) and the bit rate available to said flow in said network (e.g., the most accurate measurement of the performance of the TCP communications may involve the use of the connection type TCP echo packet... however, the round trip time is shorter than in the case of TCP because of the connection less type...exhibits the worst

`performance is the round trip measurement based on the ICMP`
`echo packet,  col. 12, lines 41-60, Aoki).`

***Regarding claim* 6**, A method for routing an end-to-end flow from a sending entity to a receiving entity in said wireless network either directly ([0036], Kadyk), or via a proxy, as a comprising the steps of:

 Aoki teaches

  an estimation unit `(e.g., Performance judging unit 53 of Fig.` `14),` for estimating a current minimum data load necessary to occupy a bandwidth available to said flow in said network , said estimation unit outputting a flow's pipe capacity `(measurement-oriented packet transmitting/receiving` `unit),` estimation and `(col. 5, lines 17-21 and col. 16, lines 33-` `67, particularly, lines 33-37, Aoki)`

  comparing said estimated pipe capacity with a predetermined capacity threshold `(col. 3, line 58 through col. 4, line 1, Aoki);`

  determining to proxy said flow if said estimated pipe capacity lies above said capacity threshold `(e.g., the measurement-oriented packet unit 51` `receives the ICMP echo reply packets transmitted back by` `the receiving-side communications device, and measures of` `the round trip times (RTT1, RTT2,..,RTTn) of the respective` `packets (step S11)col. 3, line 58 through col. 4, line 8` `and col. 16, lines 3-12, Aoki).`

***Regarding claim* 8,** a method for proxying at least one end-to-end data flow in a network, characterised in that it comprises steps of:

Aoki teaches

  an estimation unit `(e.g., Performance judging unit 53 of Fig.` `14),` for estimating a current minimum data load necessary to occupy a bandwidth available to said flow in said network , said estimation unit outputting a flow's pipe capacity `(measurement-oriented packet transmitting/receiving`

unit), estimation and (col. 5, lines 17-21 and col. 16, lines 33-67, particularly, lines 33-37)

a comparison unit (e.g., Performance Determining unit), for comparing said estimated pipe capacity with a predetermined capacity threshold (col. 3, line 58 through col. 4, line 1);

a decision unit (Fig. 15—item S13), for deciding to proxy said flow if said estimated pipe capacity lies above said capacity threshold (e.g., The measurement-oriented packet unit 51 receives the ICMP echo reply packets transmitted back by the receiving-side communications device, and measures of the round trip times (RTT1, RTT2, , , ,RTTn) of the respective packets (step S11)col. 3, line 58 through col. 4, line 8 and col. 16, lines 3-12); and

a routing unit (Fig. 16—item RT, 'Router'), for routing said flow according to the decision (col. 16, lines 38-43 and lines 60-67).

Regarding claim 9, a method comprising substantially the same limitations as those addressed in claim 2. Therefore the same rationale of rejection is applicable.

Regarding claim 10, a method comprising substantially the same limitations as those addressed in claim 3. Therefore the same rationale of rejection is applicable.

Regarding claim 12, a method comprising substantially the same limitations as those addressed in claim 5. Therefore the same rationale of rejection is applicable.

Regarding claim 13, a method wherein said flow is transmitted between a sending entity (Client 402 of Fig. 14, Kadyk) and a receiving entity via a node in said network (Server 406 of Fig. 14, Kadyk), wherein said routing step is carried out in said node ([0012 and 0049], Kadyk).

***Regarding claim* 14**, a method wherein the flow is routed from the node to a proxy `[e.g., receiving or sending a request for a secure client-proxy connection and establishing the secure client-proxy connection, [0053], Kadyk]` processed in said proxy and sent towards the receiving entity `(e.g., With the client having been authenticated, the proxy 404 performs the act of forwarding the request for a secure end-to-end connection to the server 406, [0055], Kadyk].`

***Regarding claim* 15**, a proxy for at least one end-to-end data flow in a network, comprising:

Means `(e.g., Performance judging unit 53 of Fig. 14)` for obtaining a flow's pipe capacity estimation, resulting from an estimation of a current minimum data load necessary to occupy a bandwidth available to said flow in said network `(col. 5, lines 17-21 and col. 16, lines 33-67, particularly, lines 33-37, Aoki),`

means `(e.g., Performance Determining unit)` for performing a comparison of said estimated pipe capacity with a predetermined capacity threshold `(col. 3, line 58 through col. 4, line 1, Aoki),`

means `(Fig. 15—item S13)` for performing a decision to proxy said flow if said estimated pipe capacity lies above said capacity threshold `(col. 3, line 58 through col. 4, line 8 and col. 16, lines 3-12, Aoki),` and

means `(Fig. 16—item RT, 'Router')` for initiating a routing of said flow according to the decision `(col. 16, lines 38-43 and lines 60-67, Aoki),` when the product is run on a computer (col. 6, lines 5-24, Aoki).

***Regarding claim* 16**, a method comprising substantially the same limitations as those addressed in claim 2. Therefore the same rationale of rejection is applicable.

Regarding claim 17, a method wherein said capacity threshold depends on a processing load of said proxy (e.g., an overhead (a load on the server and the router) burdened on the measurement. it would be rather desirable to utilize the ICMP echo packet with a processing load because of the overhead becoming larger in the order of the ICMP, the UDP and the TCP, col. 12 lines 56-60, Aoki).

Regarding claim 19, a method wherein said flow's pipe capacity estimation is based on the end-to-end worst-case round trip time (e.g., S32 of Fig. 20) and the bit rate available to said flow in said network (e.g., the most accurate measurement of the performance of the TCP communications may involve the use of the connection type TCP echo packet... however, the round trip time is shorter than in the case of TCP because of the connection less type...exhibits the worst performance is the round trip measurement based on the ICMP echo packet, col. 12, lines 41-60, Aoki).

Regarding claim 20, a method wherein said flow is transmitted between a sending entity (Client 402 of Fig. 14, Kadyk) and a receiving entity via a node in said network (Server 406 of Fig. 14, Kadyk), wherein said routing step is carried out in said node ([0012 and 0049], Kadyk).

Regarding claim 21, a method wherein the flow is routed from the node to a proxy [e.g., receiving or sending a request for a secure client-proxy connection and establishing the secure client-proxy connection, [0053], Kadyk] processed in said proxy and sent towards the receiving entity (e.g., With the client having been authenticated, the proxy *404* performs the act of forwarding the request for a secure end-to-end connection to the server *406,* [0055], Kadyk].

***Regarding claim* 23**, the proxy wherein said pipe capacity estimation is based on the end-to-end worst-case round trip time `(e.g., S32 of Fig. 20)` and the bit rate available to said flow in said network `(e.g., the most accurate measurement of the performance of the TCP communications may involve the use of the connection type TCP echo packet... however, the round trip time is shorter than in the case of TCP because of the connection less type...exhibits the worst performance is the round trip measurement based on the ICMP echo packet, col. 12, lines 41-60).`

15. Claims 4, 11, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aoki** et al. (US 6,757,255) (**Aoki** hereafter) and **Kadyk** et al. (2002/0157019) (**Kadyk** hereafter) in view of **Ludwig** et al. (EP 0948168 A1).

***Regarding claim* 4**, wherein said estimation unit is adapted to take into account local information received from said network and representing the state of said network.
Aoki and Kadyk teach all the limitations of claims 1, 6, 8 and 15 for at least one end-to-end data flow in a network.

However, the **combination of Aoki and Kadyk** fails to explicitly teach an account for local information received from said network and representing the state of said network.

Ludwig teaches estimation unit is adapted to take into account local information received from said network and representing the state of said network (e.g. examiner interprets account local information as a bottleneck window and the state of network as defining a new window, [0049]).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teachings of **Aoki** and **Kadyk** for proxying one end-to-end data flow in a network with the teachings of Ludwig to achieve a simple and highly flexible method, where the use of this bottleneck window, be it alone or in conjunction with known windows, achieves a more effective congestion avoidance than the known solutions ([0049], **Ludwig**).

Regarding claim 11, a method comprising substantially the same limitations as those addressed in claim 4. Therefore the same rationale of rejection is applicable.

Regarding claim 18, a method wherein said estimation step comprises the step of taking into account local information received from said network and representing the state of said network.

Regarding claim 22, wherein said means (e.g., ST 4 of Fig. 8, Ludwig) for obtaining said pipe capacity estimation takes into account local information received from said network and representing the state of said network (e.g. examiner interprets account local information as a bottleneck window and the state of network as defining a new window, [0049], Ludwig)..

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wen et al. (US 7,333,431) discloses control nodes (e.g. proxy) that are able to monitor network conditions and determine existing congestion conditions on a per connection, per traffic stream, per IP address or address range, or other basis. By knowing the existing congestion conditions, the control node can make decisions regarding an appropriate

initial setting of a congestion window so as to best utilize the available bandwidth of a communication path.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARK O. AFOLABI whose telephone number is (571) 270-5627. The examiner can normally be reached on Monday-Friday between (8:30 am to 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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